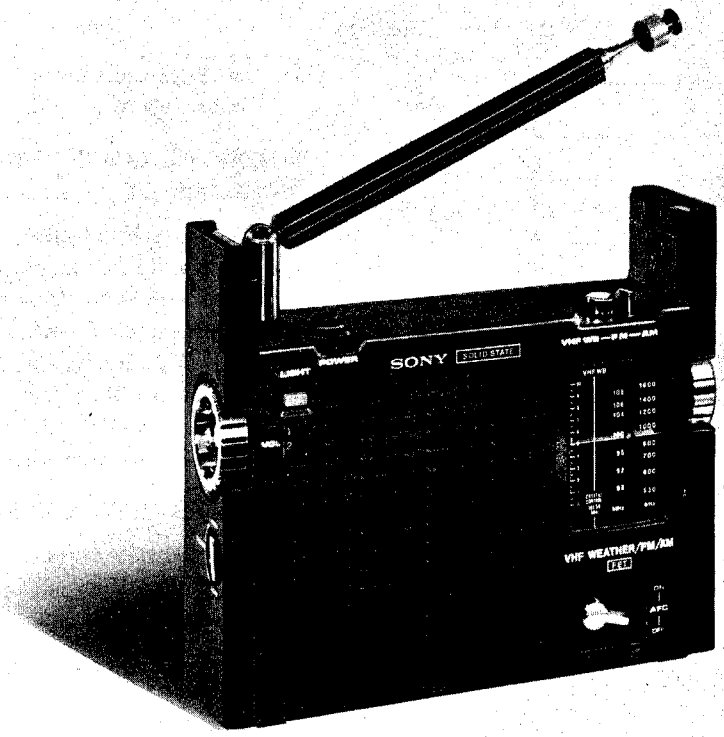
# TFM-8100W




## SPECIFICATIONS

**Circuit System:** 15-transistor (including 1-FET) super-heterodyne,
1 transistor for auxiliary circuit,
and 7 diodes (including 1 LED)

**Frequency Coverage:**
FM 87.5 ~ 108 MHz (3.43 m ~ 2.78 m)
AM 530 ~ 1,605 kHz (566 m ~ 187 m)
VHF WB 162.55 MHz (1.85 m)

**Intermediate Frequency:**

| | |
|---|---|
| FM | 10.7 MHz |
| AM | 455 kHz |
| VHF WB | 10.7 MHz |

**Antenna System:**

| | |
|---|---|
| FM, VHF WB | built-in telescopic antenna |
| AM | built-in ferrite bar antenna |

**Maximum Sensitivity**
at 50 mW output:

| | |
|---|---|
| FM | 1.25 μV (2 dB) |
| MW | 35.4 μV/m (31 dB/m) |
| VHF WB | 0.8 μV (-2 dB) |

**Selectivity**
at ±10 kHz off-resonance: 26 dB at 1,400 kHz

**Power Output**
at 10% distortion: 650 mW
maximum: 1W

**Current Drain**
at zero signal: FM 23 mA, AM 19 mA
at 10% distortion: 300 mA

**Power Requirement:** Three "C" size flashlight batteries 4.5 V in total, or
car battery by using SONY DCC-126 car battery cord.

**AUX IN Jack**
impedance: 5 kΩ

**MPX OUT Jack**
impedance: 5 kΩ
level: -26 dB (38 mV)

**Record Out Jack**
impedance: 1 kΩ
level: -60 dB (0.77 mV)

**Speaker:** 3¾" (9 cm) φ, PM dynamic, 8Ω

**Dimensions:** 8 7/16" (W) x 7" (H) x 2 3/16" (D)
(214 mm x 178 mm x 56 mm)

**Weight:** 2 lb 15 oz (1,350g)

SONY®
SERVICE MANUAL

**TFM-8100W**

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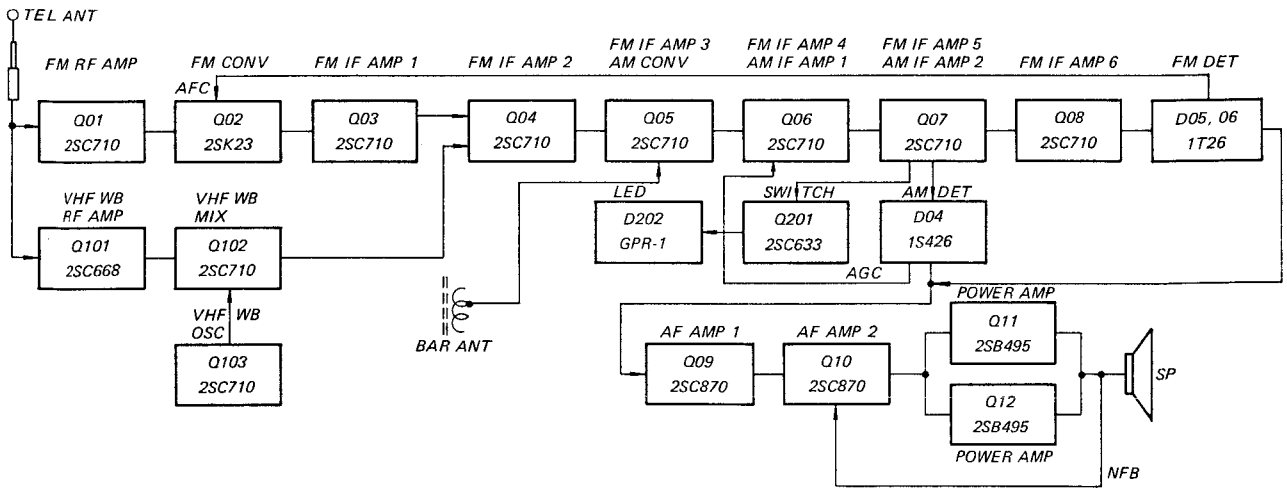
# SECTION 1
# OUTLINE

## 1-1. BLOCK DIAGRAM




**Note:** LED; Light Emitting Diode

*Fig. 1-1*

## 1-2. CIRCUIT DESCRIPTION

### 1. *Resonance-Indicating Circuit*

The model TFM-8100W resonance-indicating circuit uses an LED (Light Emitting Diode).

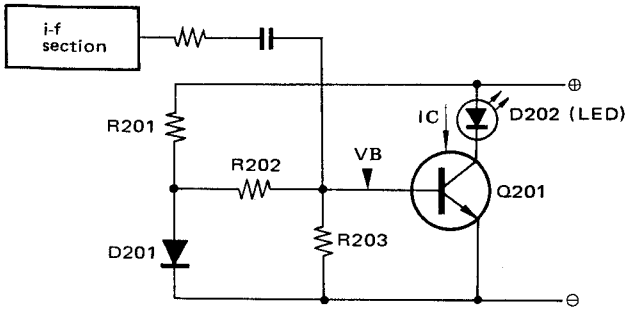



*Fig. 1-2*

The circuit is shown in Fig. 1-2. Resistors R201, R202, R203, and diode D201 keep a constant bias voltage ($V_B$) on the base of Q201. The bias is set at the cut-off point of Q201. Here, D201 stabilizes the bias against a variation in source voltage or temperature.

ZERO collector current flows at no input signal, but the transistor has a high sensitivity to an input signal. When an i-f signal (of 455 kHz or 10.7 MHz) is added to the base, collector current flows in proportion to the signal strength. Thus, the LED (D202) is illuminated by the collector current.

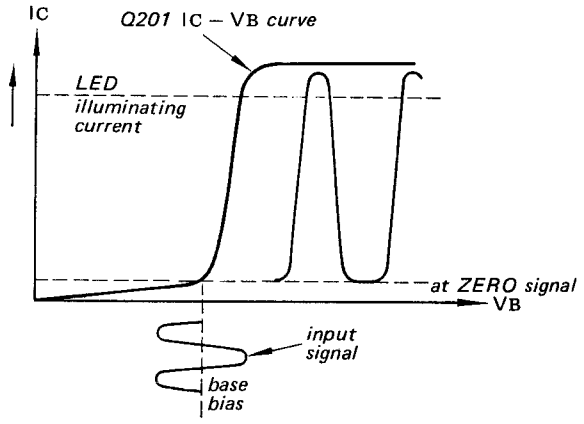



*Fig. 1-3*

### 2. *VHF WEATHER Tuner*

In the model TFM-8100W, the local oscillator for the vhf weather band uses a crystal resonator XTAL as shown in Fig. 1-4 to obtain stable reception of vhf weather broadcasting. The resonant frequency of the crystal oscillator is 57.75 MHz. Transistor Q103 uses the 57.75-MHz signal on its base to produce harmonic components at its collector. Resonant circuits which contain inductor L104 and capacitor C114, or L103 and C115 are connected to the collector of Q103 and are tuned to resonance at the third harmonic (173.25 MHz). Transistor Q102 mixes the vhf weather band signal (162.55 MHz) and local oscillator signal (173.25 MHz) at its base and applies the resulting intermediate frequency (10.7 MHz) to the i-f stage.

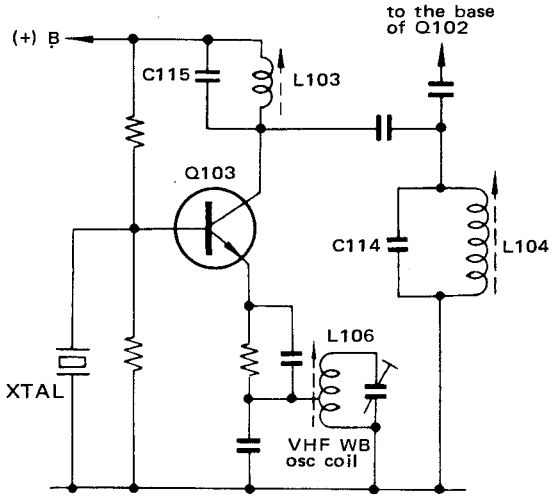



*Fig. 1-4*

**— Hardware Nomenclature —**

| | | |
|---|---|---|
| **P** | – Pan Head Screw | ⊕ |
| **PS** | – Pan Head Screw with Spring Washer | ⊕ |
| **K** | – Flat Countersunk Head Screw | ⊕ |
| **B** | – Binding Head Screw | ⊕ |
| **RK** | – Oval Countersunk Head Screw | ⊕ |
| **T** | – Truss Head Screw | ⊕ |
| **R** | – Round Head Screw | ⊕ |
| **F** | – Flat Fillister Head Screw | ⊖ |
| **SC** | – Set Screw | ⊖ |
| **E** | – Retaining Ring (E Washer) | |

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

**– Example –**

⊕ P 3x10
- Type of Slot
- Length in mm (L)
- Diameter in mm (D)
- Type of Head

## 1-3. EXTERNAL VIEW

*– Front View –*

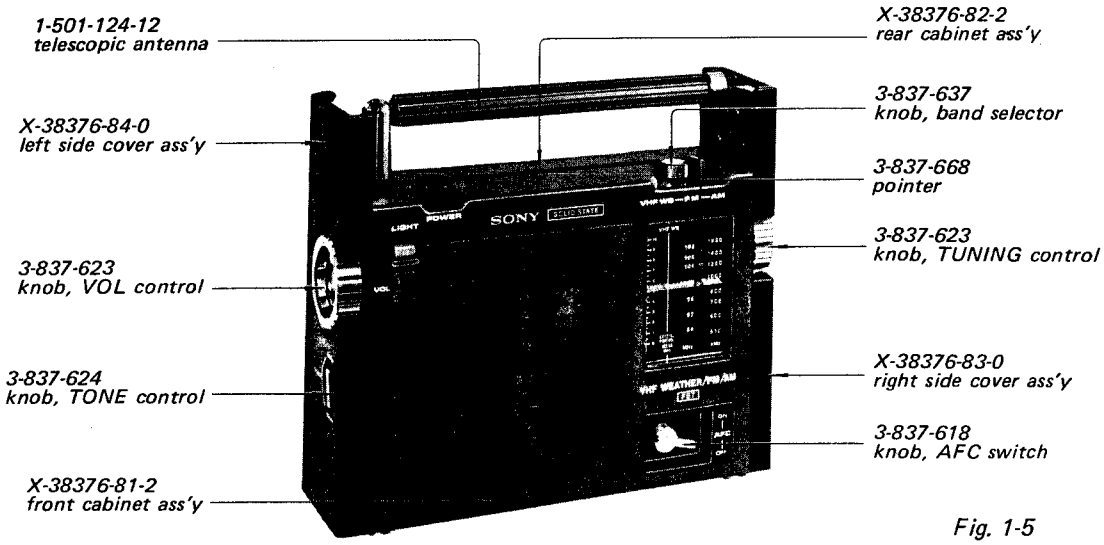



*Fig. 1-5*

*– Rear View –*

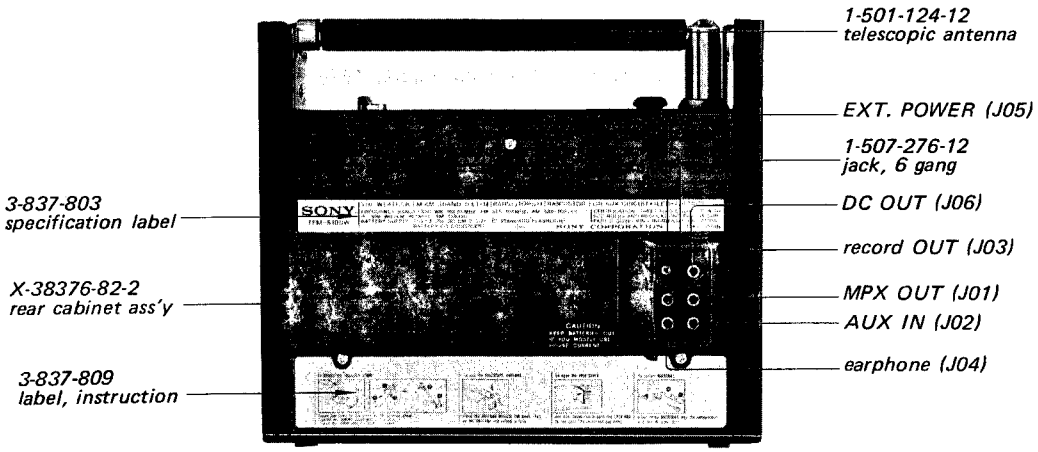



*Fig. 1-6*

## 1-4. INTERNAL VIEW

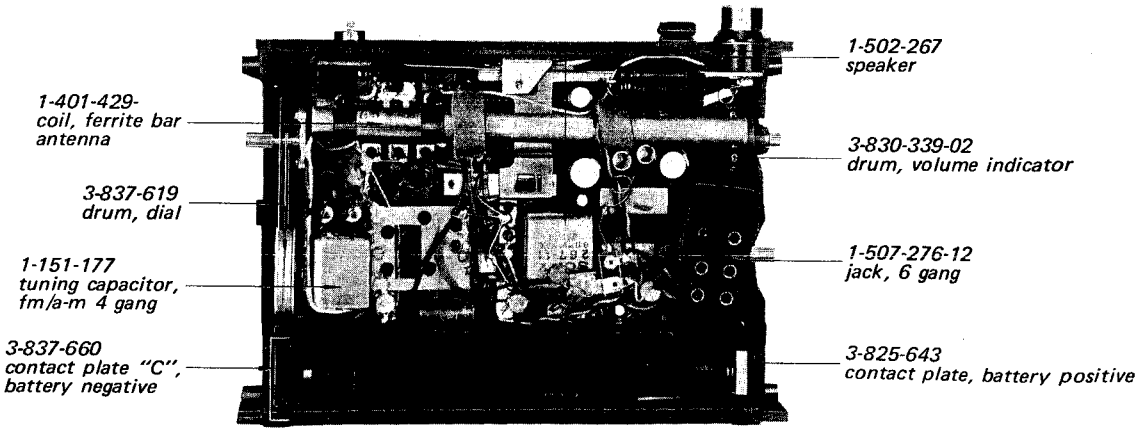



*Fig. 1-7*

# SECTION 2
# DISASSEMBLY

## 2-1. REAR CABINET REMOVAL

### Left Side Cover Removal

1. Remove the four screws labeled Ⓐ in Fig. 2-1.
2. Pull out the left side cover along with the volume knob and tone knob as shown in Fig. 2-1.

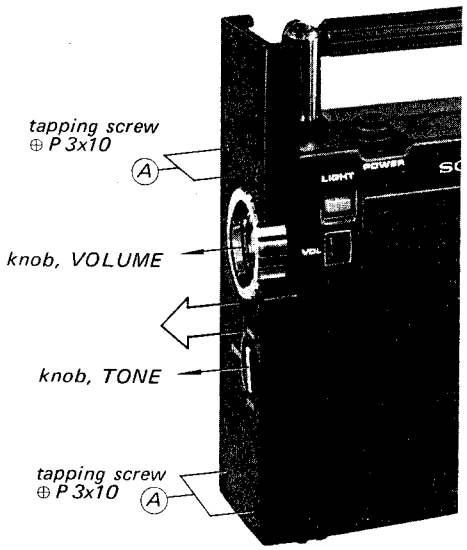



*Fig. 2-1*

### Right Side Cover Removal

3. Press down the antenna release button shown in Fig. 2-2.
4. Pull out the telescopic antenna.
5. Remove the four screws labeled Ⓑ in Fig. 2-2.
6. Pull out the right side cover with the tuning knob and battery lid as shown in Fig. 2-2.

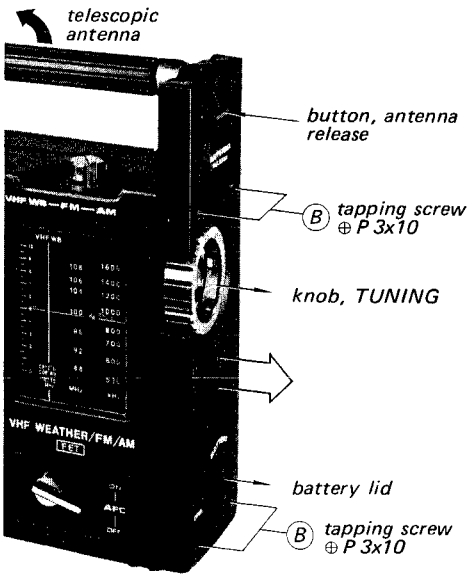



*Fig. 2-2*

### Rear Cabinet Removal

7. Remove the three screws labeled Ⓒ in Fig. 2-3.
8. Lift up the rear cabinet.

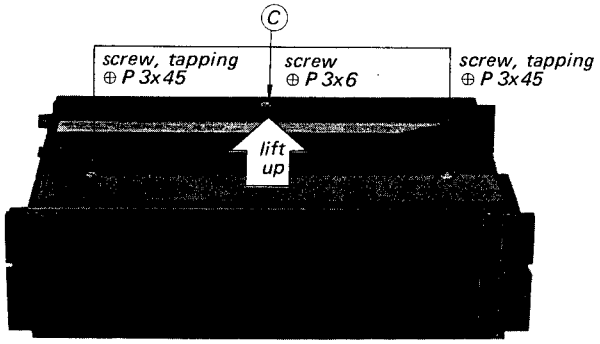



*Fig. 2-3*

## 2-2. CHASSIS REMOVAL

1. Remove the rear cabinet.
2. Set the band selector to VHF WB (VHF Weather Band) position as shown in Fig. 2-4.
3. Push the POWER switch button as shown in Fig. 2-4.
4. Unsolder the pvc wire labeled Ⓓ in Fig. 2-4.
5. Remove the screw labeled Ⓔ in Fig. 2-4.
6. Lift up the chassis.

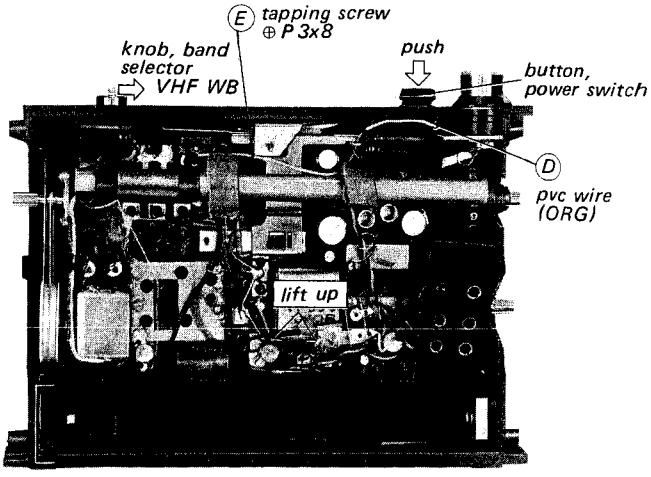



*Fig. 2-4*

## 2-3. PRINTED CIRCUIT BOARD REMOVAL

1. Remove the rear cabinet and chassis.
2. Remove the four screws labeled Ⓕ, the two plates labeled Ⓖ and the slide switch shown in Fig. 2-5.

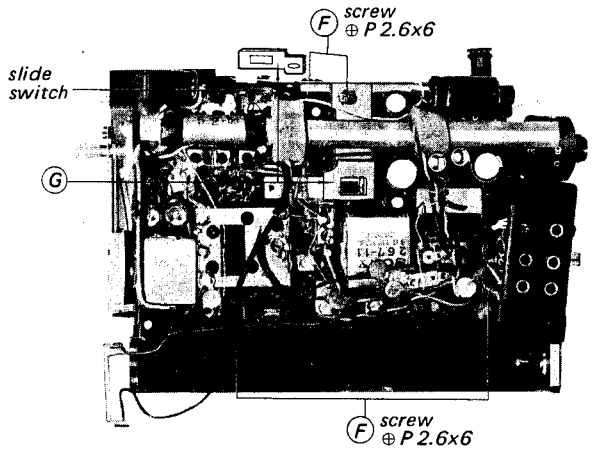



Fig. 2-5

3. Unsolder the following lead wires and the lug terminal shown in Fig. 2-6.
   a) three capacitor leads marked ●
   b) two tinned copper wires marked ☆
   c) lug terminal marked △
4. Loosen the green tie marked □
5. Detach the cement-contacted portions marked ※ by using a sharp edge like a knife.

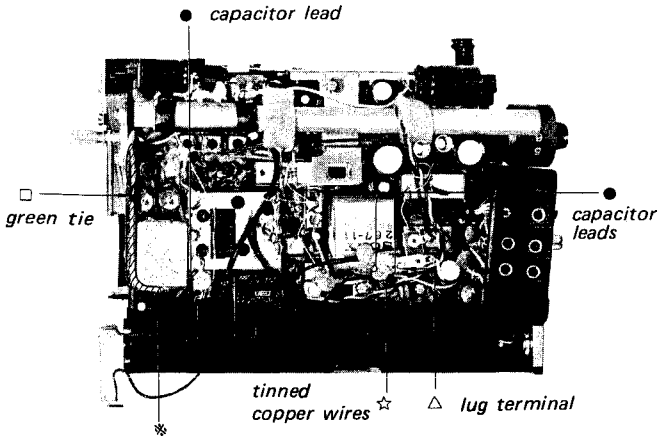



Fig. 2-6

6. Push the back plate by a stick as shown in Fig. 2-7.
7. Remove the back plate.

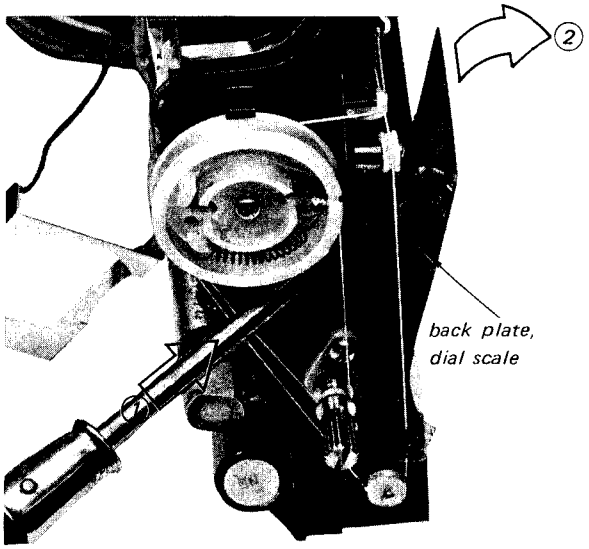



Fig. 2-7

8. Unsolder the four tinned copper wires shown in Fig. 2-8.
9. Lift up the slide switch.
10. Remove the screw labeled Ⓗ in Fig. 2-8.

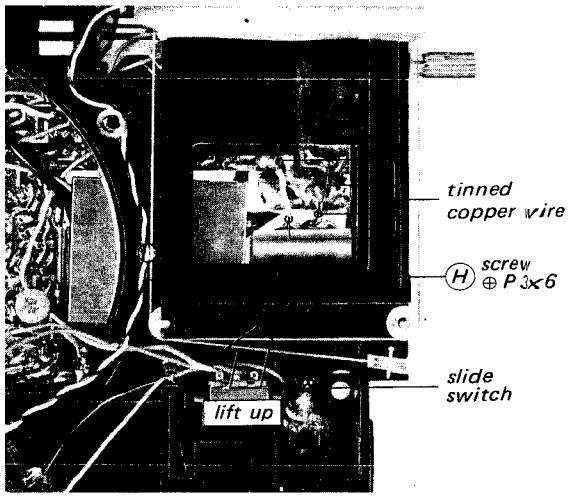



Fig. 2-8

11. Remove the speaker.
12. Unsolder the four pvc wires marked ▲ in Fig. 2-9.
13. Remove the screw labeled (I) and remove the resonance indicator block.
14. Remove the screw labeled (J) and remove the power switch.
15. Pull out the tone control shown in Fig. 2-10.
16. Push down the printed circuit board squeezing bar antenna holder.

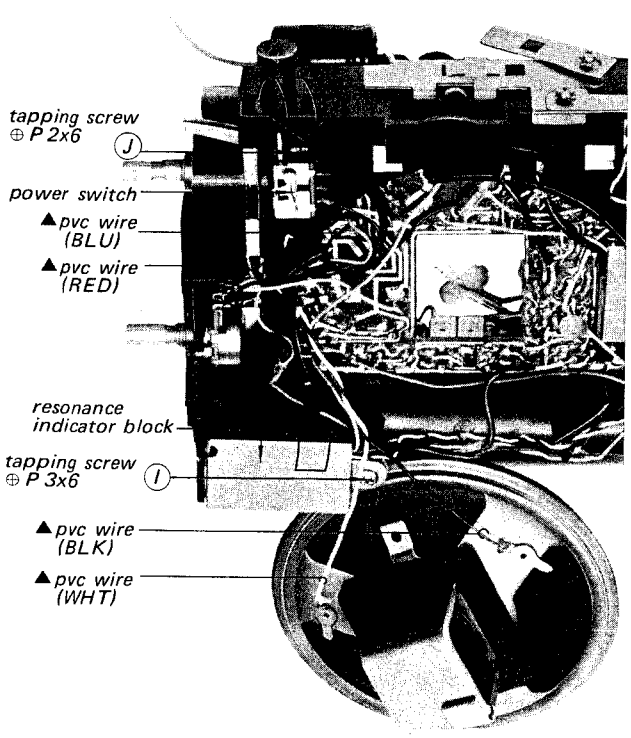



Fig. 2-9

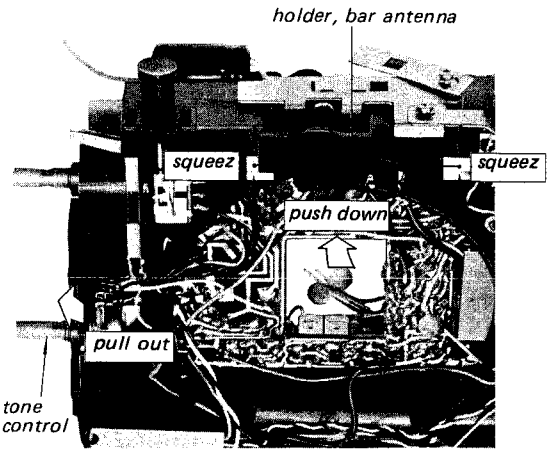



Fig. 2-10

## 2-4. VHF WB BLOCK REMOVAL

1. Remove the screw labeled (K) in Fig. 2-11.
2. Unsolder the two lead wires shown in Fig. 2-11.
3. Unsolder the following lead wires shown in Fig. 2-12.
   a) black coaxial cable marked ●
   b) braided wire marked ☆
   c) ceramic capacitor lead marked □
   d) tinned copper wire marked △
   e) bar antenna lead marked ◎
   f) trimmer capacitor leg marked ◇
4. Detach the cement-contacted portions marked ※ by using a sharp edge like a knife.
5. Lift up the VHF WB block.

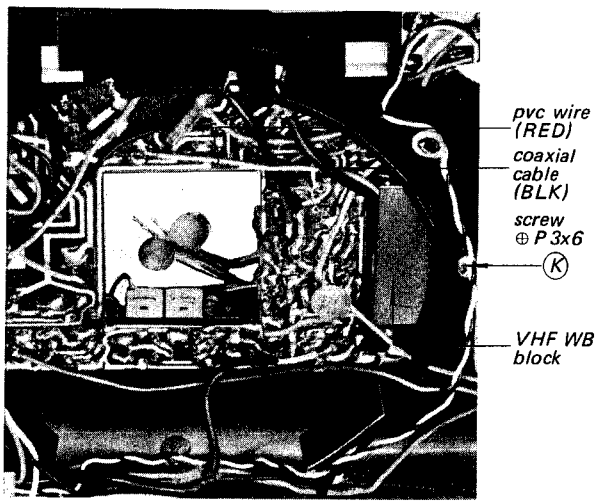



Fig. 2-11

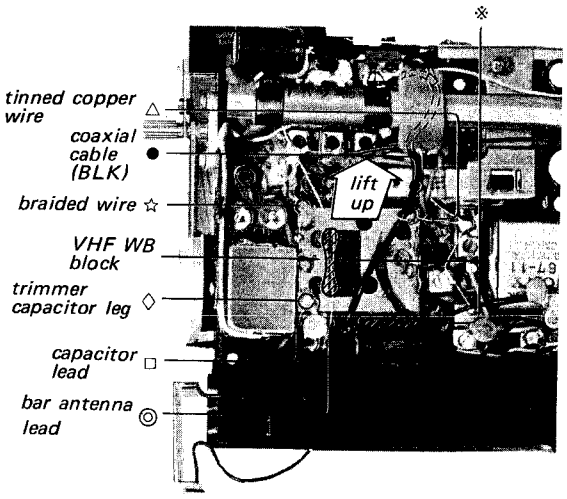



Fig. 2-12

## 2-5. DIAL CORD STRINGING

*Preparation*

1. Remove the chassis.
2. Cut the dial cord by the specified length as shown in Fig. 2-13.

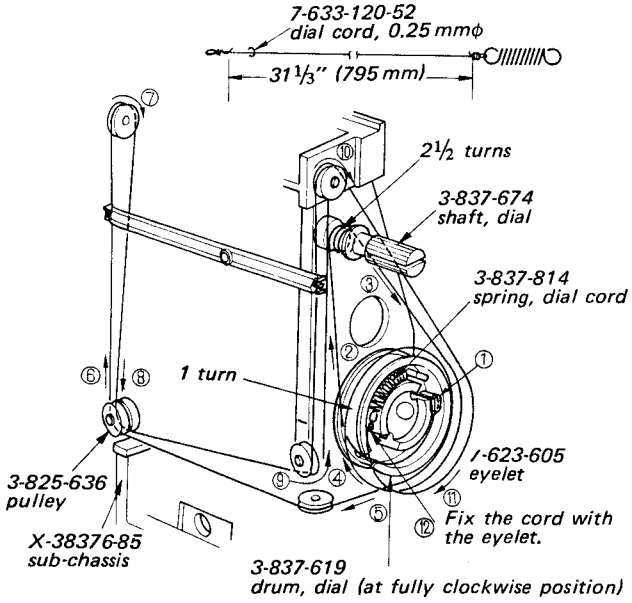



*Fig. 2-13*

*Stringing*

1. Fix the dial cord to the protrusion (step ①) and string the cord in numerical order as shown in Fig. 2-13.

   **Note:** Pass through the dial cord at step ④ between the two cords of steps ② and ③ as shown in Fig. 2-14.
2. Fasten the both knots with a contact cement.

*Pointer Setting*

1. Rotate the dial shaft counterclockwise to the full.
2. Set the pointer to the slit as shown in Fig. 2-15.

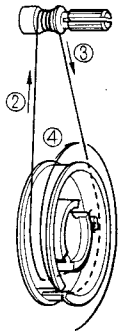


*Fig. 2-14*

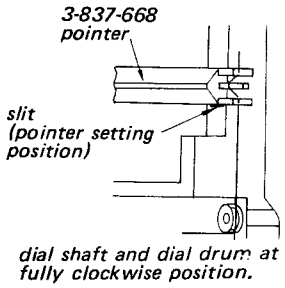



*Fig. 2-15*

# SECTION 3
# CIRCUIT ADJUSTMENTS

## 3-1. IF ALIGNMENT

Test Equipments/Tools Required:
- Rf signal generator (for fm and a-m)
- Loop antenna
- VTVM
- Screwdriver for alignment
- Oscilloscope

*1. Fm I-f Alignment*

Preparation:

Sweep/Marker Generator Connection: to the telescopic antenna lead as shown in Fig. 3-1.
Oscilloscope Connection: MPX OUT jack
Sweep Generator Frequency: 10.7 MHz
Marker Generator Frequency: 10.7 MHz
Band Selector Setting: FM
AFC Switch: OFF

Procedure:

1. Turn the core of discriminator transformer (IFT F6) fully counterclockwise.
2. Turn the core of fm i-f transformers (IFT F1 ~ IFT F5, IFT F7) to obtain the maximum amplitude response curve as shown in Fig. 3-3.
3. Turn the core of discriminator transformer (IFT F6) to obtain the "S" curve response as shown in Fig. 3-4.

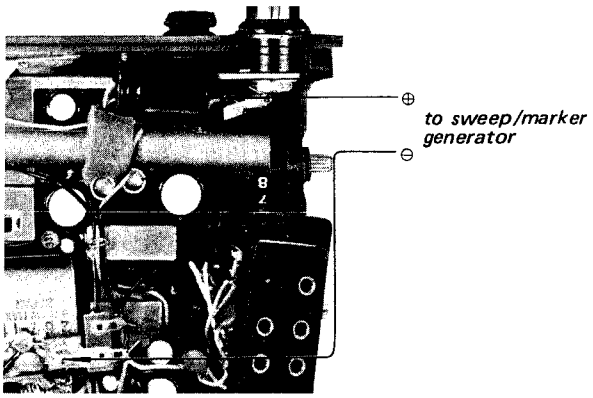



*Fig. 3-1 Sweep/marker generator coupling*

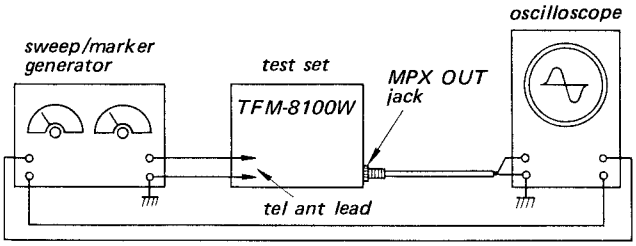



Fig. 3-2 Fm i-f alignment setup

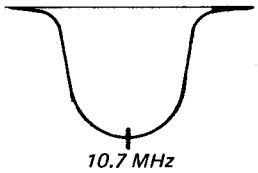



Fig. 3-3

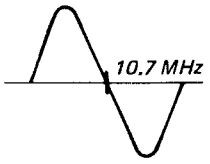



Fig. 3-4

| Adjustment Item | Sweep/Marker Generator Coupling | Sweep/Marker Generator Frequency | Oscilloscope Connection | Adjust | Remarks |
|---|---|---|---|---|---|
| FM I-f | See Fig. 3-1 and Fig. 3-2 | 10.7 MHz | MPX OUT jack | IFT F1<br>IFT F2<br>IFT F3<br>IFT F4<br>IFT F5<br>IFT F6<br>IFT F7 | Band selector: FM<br>AFC switch: OFF<br>Adjust for maximum amplitude and symmetrical "S" curve on the scope. |
| VHF WB I-f | – ditto – | – ditto – | – ditto – | IFT101 | Band selector: VHF WB<br>Adjust for maximum amplitude on the oscilloscope. |

2. *Am I-f Alignment*

| Rf Signal Generator Coupling | Rf Signal Generator Frequency | VTVM Connection | Adjust | Remarks |
|---|---|---|---|---|
| Loop antenna<br>See Fig. 3-5 | 455 kHz | MPX OUT jack | CFT A1 | Band selector: AM<br>Dial shaft: fully clockwise position<br>Adjust for maximum meter reading. |

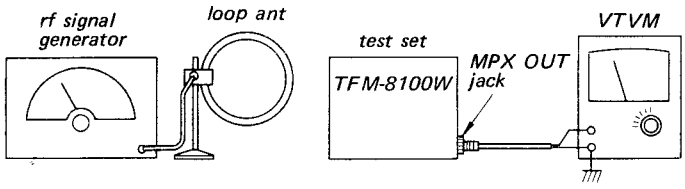



Fig. 3-5 A-m i-f alignment, frequency coverage and tracking adjustment setup

## 3-2. FREQUENCY COVERAGE AND TRACKING ADJUSTMENT

Preparation: VTVM Connection: To MPX OUT jack
Modulation: FM ..... 400 Hz ±22.5 kHz frequency-modulated signal
AM ..... 1 kHz 30% amplitude-modulated signal

| Adjustment | Rf Signal Generator Coupling | Rf Signal Generator Frequency | Receiver Dial Setting | Adjust | Remarks |
|---|---|---|---|---|---|
| FM Frequency Ceverage | Telescopic antenna lead (See Fig. 3-6 and Fig. 3-7) | 85.5 MHz | Fully downward | FM osc coil L04 | Band selector: FM<br>AFC switch: OFF<br>Adjust for maximum meter reading on VTVM. |
| | | 109.5 MHz | Fully upward | FM osc trimmer CT2 | |
| FM Tracking | | 85.5 MHz | Tune to 85.5-MHz signal | FM rf coil L03 | |
| | | 109.5 MHz | Tune to 109.5-MHz signal | FM rf trimmer CT1 | |
| AM Frequency Coverage | Loop antenna (See Fig. 3-5) | 520 kHz | Fully downward | AM osc coil L07 | Band selector: AM<br>Adjust for maximum meter reading on VTVM. |
| | | 1,680 kHz | Fully upward | AM osc trimmer CT4 | |
| AM Tracking | | 620 kHz | Tune to 620-kHz signal | AM ant coil L06 | |
| | | 1,400 kHz | Tune to 1,400-kHz signal | AM ant trimmer CT3 | |
| VHF WB | Telescopic antenna lead (See Fig. 3-6 and Fig. 3-7) | 162.55 MHz | | VHF WB ant coil L101<br>VHF WB rf coil L102<br>VHF WB tripler coil-1 L103<br>VHF WB tripler coil-2 L104<br>VHF WB osc coil L107 | Band selector: VHF WB<br>Adjust for maximum meter reading on VTVM. |

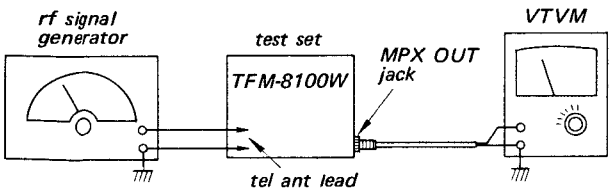



*Fig. 3-6 Fm frequency coverage and tracking adjustment setup*

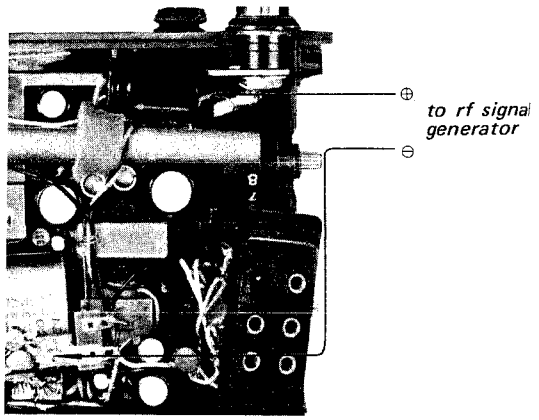



*Fig. 3-7 Rf signal generator coupling*

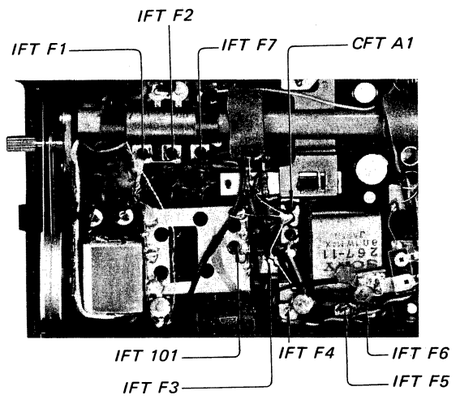



Fig. 3-8 Adjusting parts location (1)

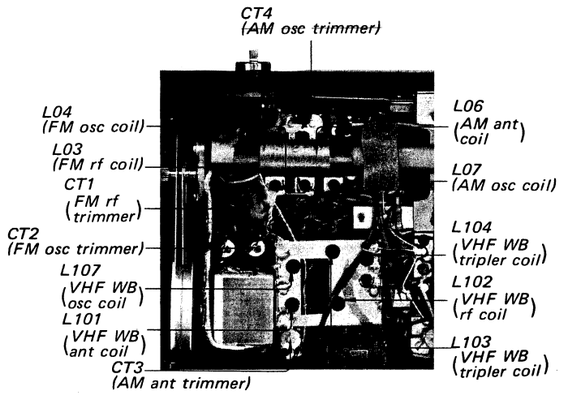



Fig. 3-9 Adjusting parts location (2)

### 3-3. VOLTAGE AND CURRENT ADJUSTMENT

Preparation:

1. Band Selector: AM (detune perfectly)
2. Connect an electrolytic capacitor (1 ~ 5 μF) across the base of Q05 and grounding circuit.

*1. Base Bias Voltage of Q06.*

R29 must be selected to obtain 0.36 ~ 0.40 V at the emitter of Q06.

R29: 1/8 W 5% carbon resistor

| | |
|---|---|
| 1-240-494 | 7,500 Ω |
| 1-240-497 | 10 kΩ |
| 1-240-501 | 15 kΩ |
| 1-240-504 | 20 kΩ |
| 1-240-506 | 24 kΩ |
| 1-240-508 | 30 kΩ |

*2. Base Bias Voltage of Q05*

R20 must be selected to obtain 0.36 ~ 0.39 V at the emitter of Q05.

R20: 1/8 W 5% carbon resistor

| | |
|---|---|
| 1-240-509 | 33 kΩ |
| 1-240-510- | 36 kΩ |
| 1-240-511 | 39 kΩ |
| 1-240-512 | 43 kΩ |
| 1-240-513- | 47 kΩ |
| 1-240-514 | 51 kΩ |

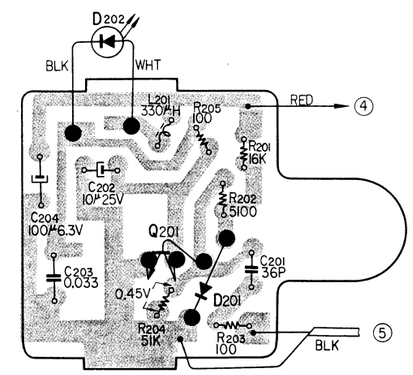
**Note:** Adjust the base bias of Q05 only after the base bias of Q06 is adjusted.



## SECTION 4
## MOUNTING AND SCHEMATIC DIAGRAMS

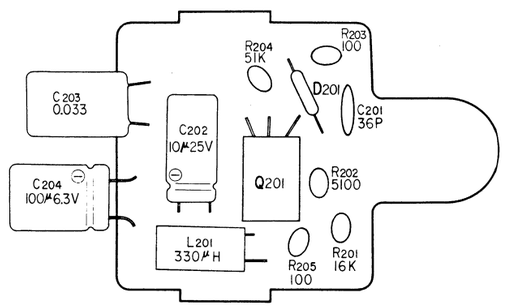
### 4-1. RESONANCE INDICATOR CIRCUIT BOARD

*— Conductor Side —*




D202 : Mounted on the Conductor side.

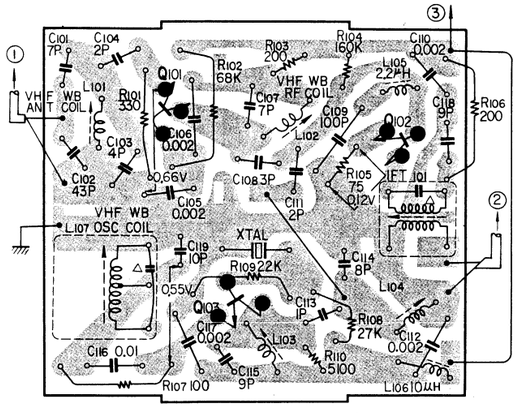
*— Component Side —*



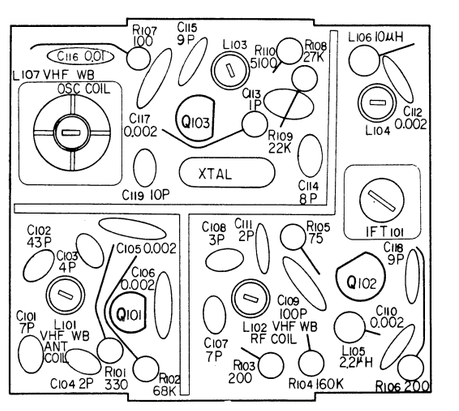

Printed circuit board
Part No. 1-539-653-12

### 4-2. VHF WB TUNER CIRCUIT BOARD

*— Conductor Side —*

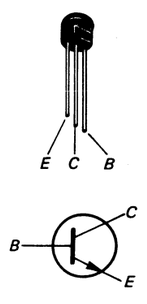



*— Component Side —*

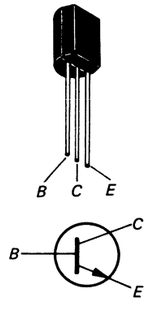



Printed circuit board
Part No. 1-539-517-11

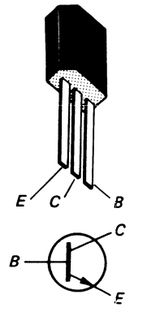
Q101; 2SC668



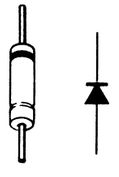

Q102, 103; 2SC710



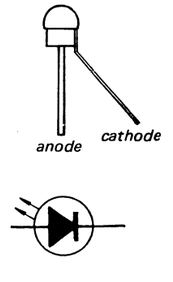

Q201; 2SC633




D201; 1S1555

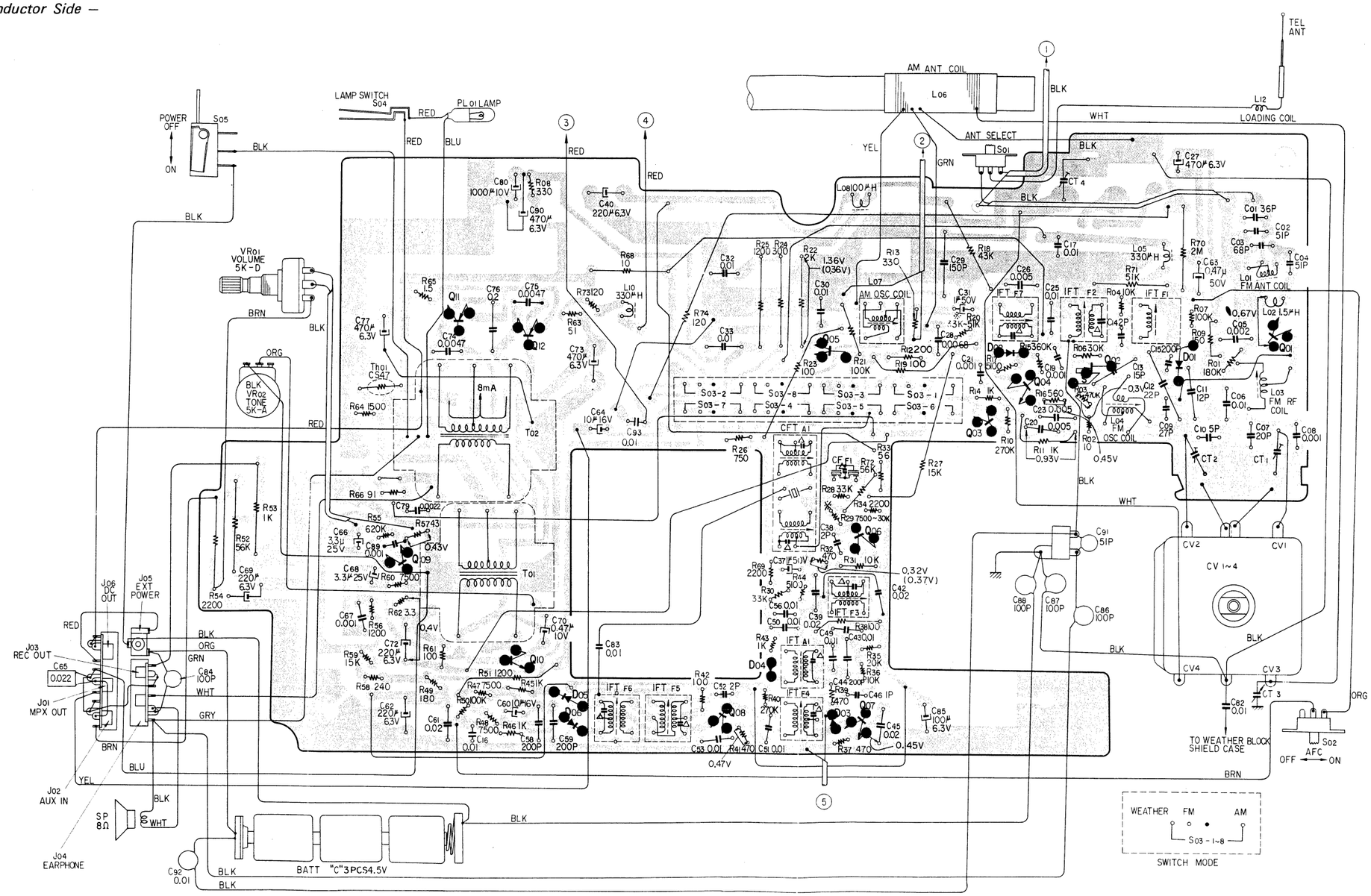


D202; GPR-1



## 4-3. MAIN CIRCUIT BOARD

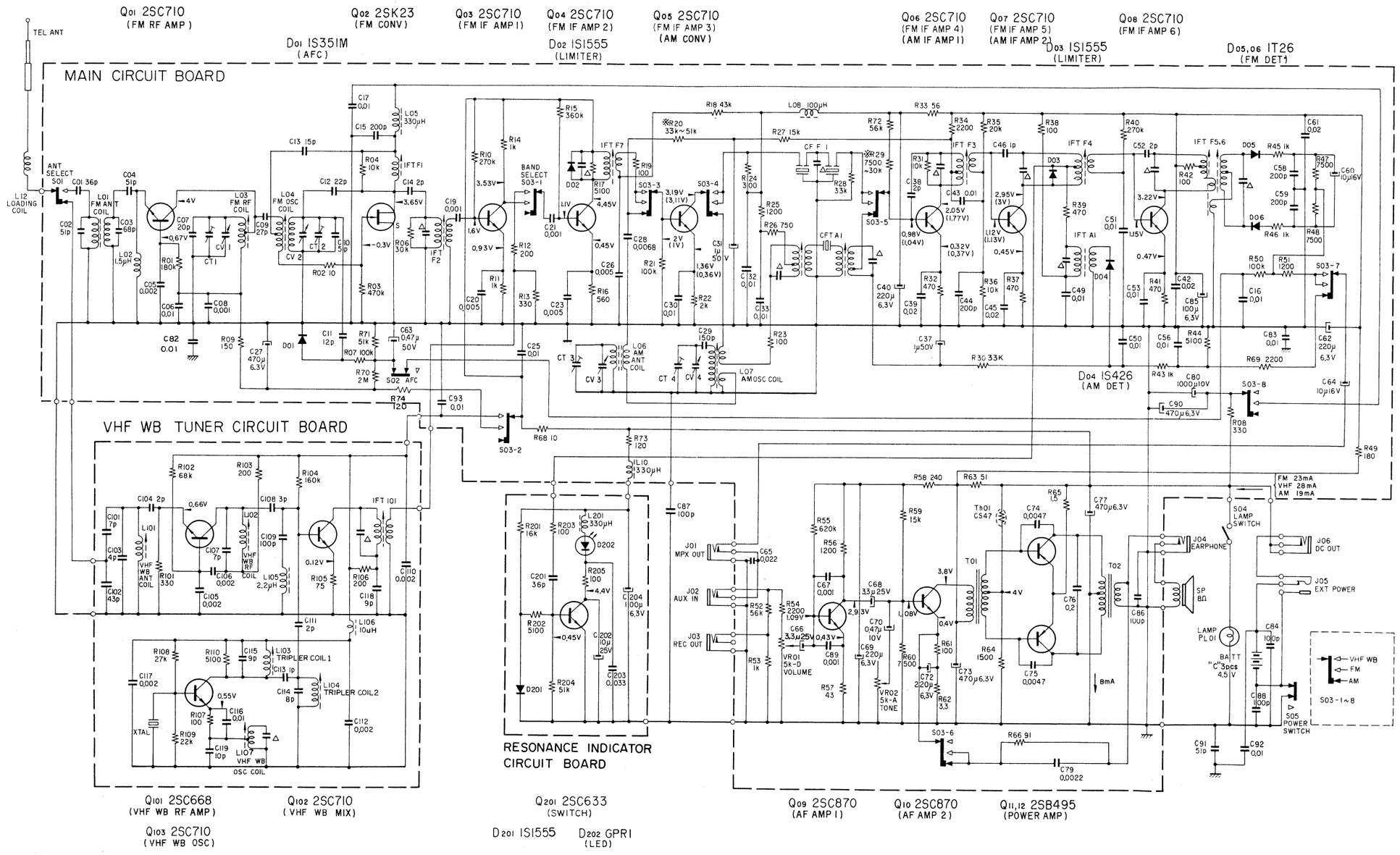
*– Conductor Side –*




**Note:**

1. Printed circuit board, Parts No. 1-539-652-12
2. The following parts are mounted on the conductor side; C42, C75, C89, C90 and R74.
3. ⏚ shows grounding to shield case or case of i-f transformers.
4. Capacitors marked △ are built in i-f transformers or ceramic filters.
5. The symbol ※ indicates a component whose value is selected to yield specified operating condition.

## 4-4. SCHEMATIC DIAGRAM

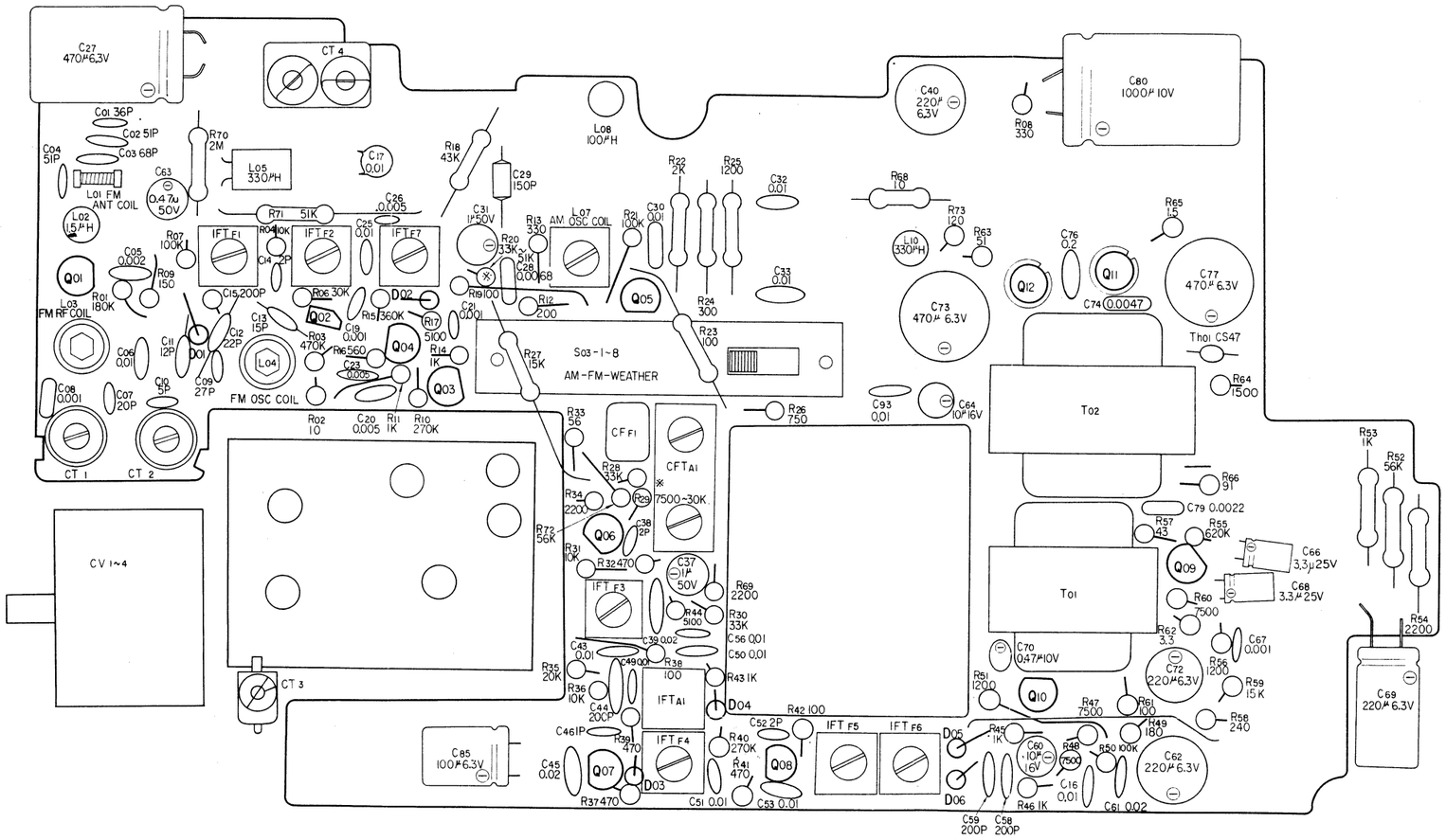

MAIN CIRCUIT BOARD
VHF WB TUNER CIRCUIT BOARD
RESONANCE INDICATOR CIRCUIT BOARD
TEL ANT
Q01 2SC710 (FM RF AMP)
Q02 2SK23 (FM CONV)
Q03 2SC710 (FM IF AMP1)
Q04 2SC710 (FM IF AMP 2)
Q05 2SC710 (FM IF AMP 3) (AM CONV)
Q06 2SC710 (FM IF AMP 4) (AM IF AMP1)
Q07 2SC710 (FM IF AMP 5) (AM IF AMP 2)
Q08 2SC710 (FM IF AMP 6)
D01 IS35IM (AFC)
D02 IS1555 (LIMITER)
D03 IS1555 (LIMITER)
D05,06 IT26 (FM DET)
D04 IS426 (AM DET)
Q101 2SC668 (VHF WB RF AMP)
Q102 2SC710 (VHF WB MIX)
Q103 2SC710 (VHF WB OSC)
Q201 2SC633 (SWITCH)
D201 IS1555
D202 GPR1 (LED)
Q09 2SC870 (AF AMP 1)
Q10 2SC870 (AF AMP 2)
Q11,12 2SB495 (POWER AMP)
FM 23mA VHF 28mA AM 19mA
VHF WB
FM
AM
S03-1~8

**Note:**

1. ⏚ shows grounding to shield case or case of i-f transformers.
2. All resistors and capacitors are in Ω and μF, unless otherwise indicated.
3. Capacitors marked △ are built in i-f transformers or ceramic filters.
4. The symbol ※ indicates a component whose value is selected to yield specified operating condition.
5. Voltage values are measured to ground circuit with a dc voltmeter (20 kΩ/V) and current value is measured with a dc ammeter.
6. Voltage and current values are taken with no radio signal received and the values shown in ( ) are taken with band selector set to AM.

## 4-5. MAIN CIRCUIT BOARD

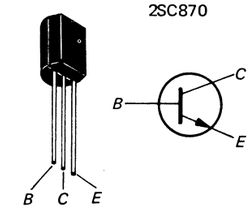
*– Component Side –*



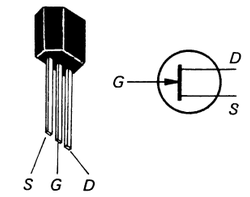

**Note:**

1. Printed circuit board, parts No. 1-539-652-12
2. The following parts are mounted on the conductor side; C42, C75, C89, C90 and R74.
3. The symbol ※ indicates a component whose value is to be selected to yield specified operating condition.

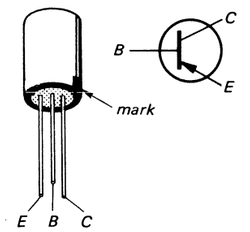
Q01, 03, 04, 05, 06, 07, 08, 09, 10; 2SC710 2SC870



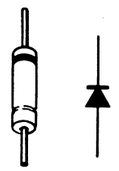

Q02; 2SK23




Q11, 12; 2SB495

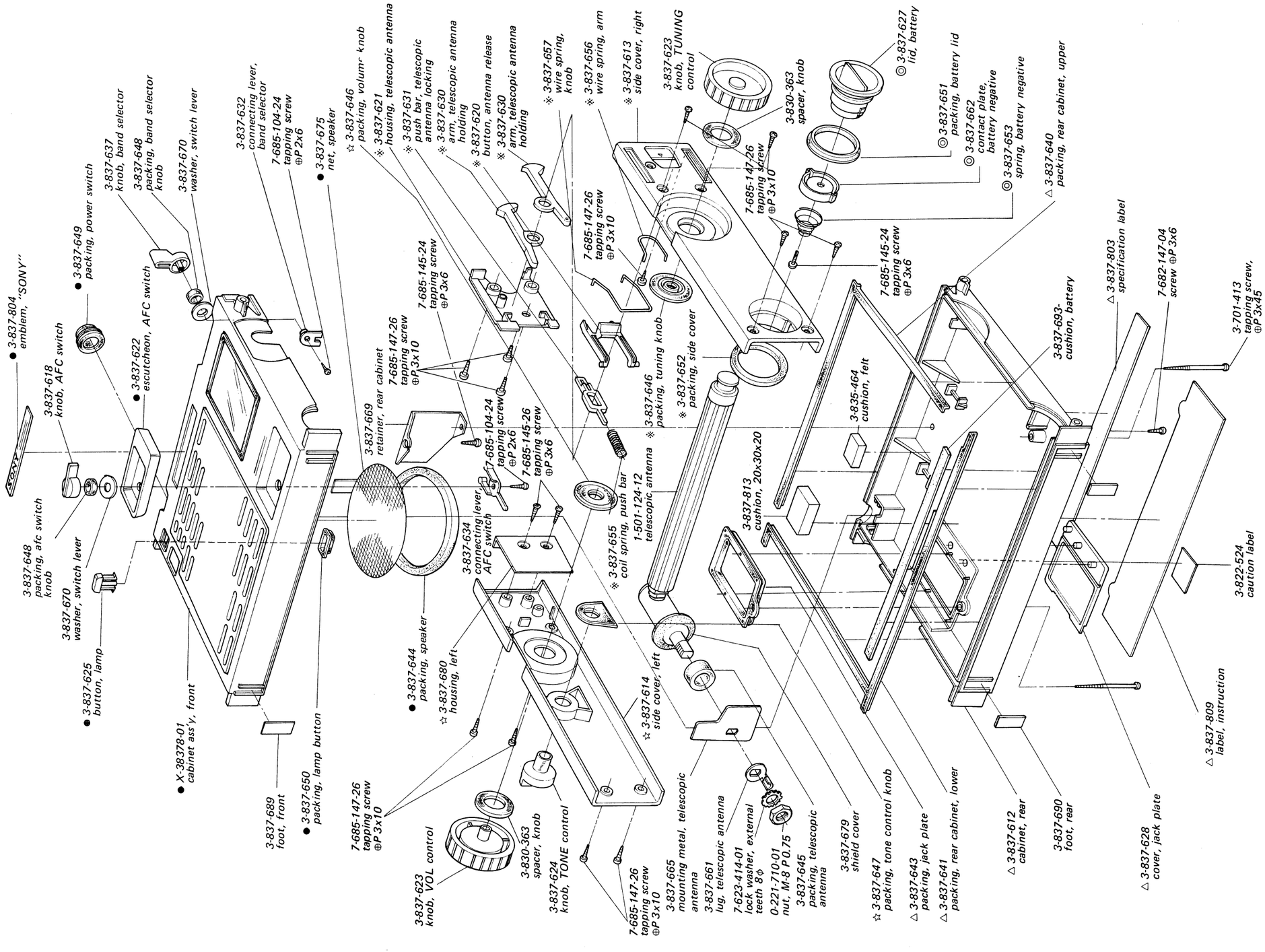



D01, 02, 03, 04, 05, 06; 1S351M 1S1555 1S426 1T26



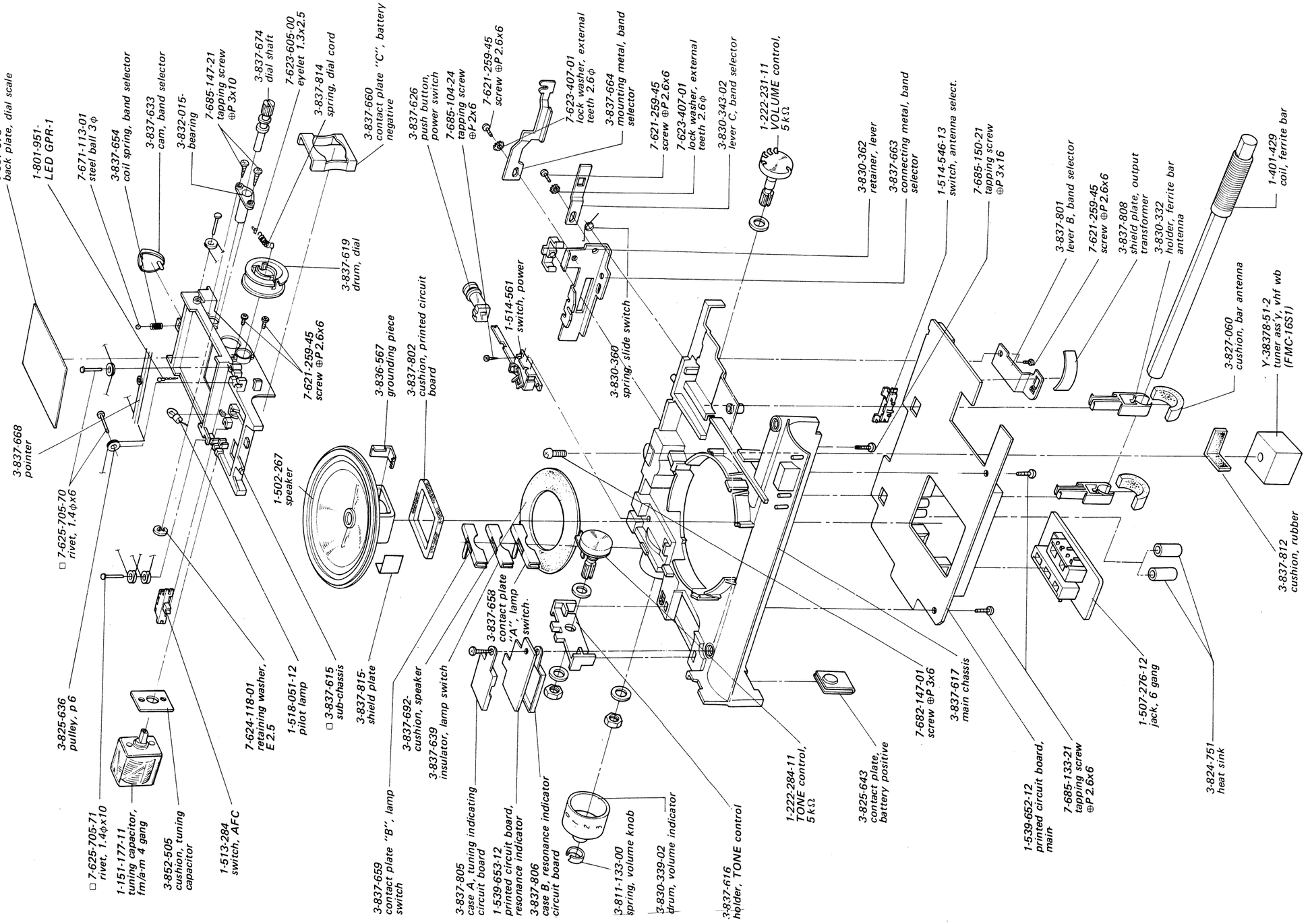
# SECTION 5
# EXPLODED VIEW AND PACKING

## 5-1. EXPLODED VIEW (1)


● 3-837-804 emblem, "SONY"
3-837-618 knob, AFC switch
● 3-837-649 packing, power switch
3-837-637 knob, band selector
3-837-648 packing, band selector knob
3-837-670 washer, switch lever
● 3-837-622 escutcheon, AFC switch
3-837-632 connecting lever, band selector
7-685-104-24 tapping screw ⊕P2x6
● 3-837-675 net, speaker
☆ 3-837-646 packing, volume knob
※ 3-837-621 housing, telescopic antenna
※ 3-837-631 push bar, telescopic antenna locking
※ 3-837-630 arm, telescopic antenna holding
※ 3-837-620 button, antenna release
※ 3-837-630 arm, telescopic antenna holding
※ 3-837-657 wire spring, knob
※ 3-837-656 wire spring, arm
※ 3-837-613 side cover, right
3-837-623 knob, TUNING control
◎ 3-837-627 lid, battery
3-830-363 spacer, knob
◎ 3-837-651 packing, battery lid
◎ 3-837-662 contact plate, battery negative
◎ 3-837-653 spring, battery negative
△ 3-837-640 packing, rear cabinet, upper
3-837-669 retainer, rear cabinet
7-685-147-26 tapping screw ⊕P3x10
7-685-145-24 tapping screw ⊕P3x6
7-685-104-24 tapping screw ⊕P2x6
7-685-147-26 tapping screw ⊕P3x10
7-685-145-24 tapping screw ⊕P3x6
7-685-147-26 tapping screw ⊕P3x10
3-837-646 packing, tuning knob
※ 3-837-652 packing, side cover
3-835-464 cushion, felt
3-837-693 cushion, battery
△ 3-837-803 specification label
7-682-147-04 screw ⊕P3x6
3-701-413 tapping screw, ⊕P3x45
3-837-813 cushion, 20x30x20
3-822-524 caution label
3-837-648 packing, afc switch knob
3-837-670 washer, switch lever
● 3-837-625 button, lamp
● X-38378-01 cabinet ass'y, front
3-837-689 foot, front
● 3-837-650 packing, lamp button
7-685-147-26 tapping screw ⊕P3x10
3-837-623 knob, VOL control
3-830-363 spacer, knob
3-837-624 knob, TONE control
7-685-147-26 tapping screw ⊕P3x10
● 3-837-644 packing, speaker
☆ 3-837-680 housing, left
3-837-634 connecting lever, AFC switch
7-685-104-24 tapping screw ⊕P2x6
7-685-145-26 tapping screw ⊕P3x6
※ 3-837-655 coil spring, push bar
1-501-124-12 telescopic, antenna
☆ 3-837-614 side cover, left
3-837-665 mounting metal, telescopic antenna
3-837-661 lug, telescopic antenna
7-623-414-01 lock washer, external teeth 8φ
0-221-710-01 nut, M-8 P0.75
3-837-645 packing, telescopic antenna
3-837-679 shield cover
☆ 3-837-647 packing, tone control knob
△ 3-837-643 packing, jack plate
△ 3-837-641 packing, rear cabinet, lower
△ 3-837-612 cabinet, rear
3-837-690 foot, rear
△ 3-837-628 cover, jack plate
△ 3-837-809 label, instruction

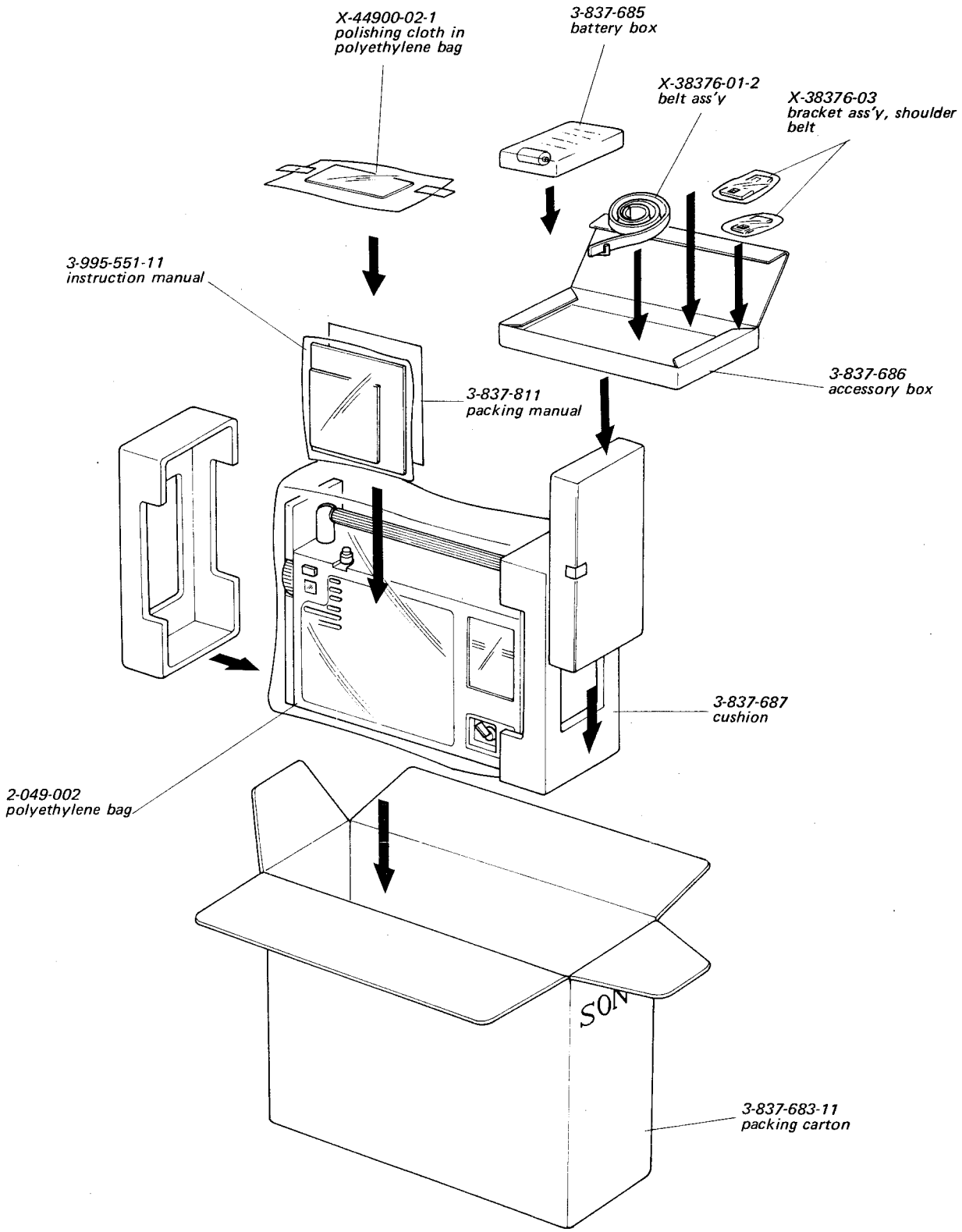
Parts marked ● are included in front cabinet ass'y, X-38376-81-2.
Parts marked △ are included in rear cabinet ass'y, X-38376-82-2.
Parts marked ※ are included in right side cover ass'y, X-38376-83.
Parts marked ☆ are included in left side cover ass'y, X-38376-84.
Parts marked ◎ are included in battery lid ass'y, X-38376-86.

## 5-2. EXPLODED VIEW (2)


3-837-673 back plate, dial scale
1-801-951- LED GPR-1
7-671-113-01 steel ball 3φ
3-837-654 coil spring, band selector
3-837-633 cam, band selector
3-832-015- bearing
7-685-147-21 tapping screw ⊕P 3x10
3-837-674 dial shaft
7-623-605-00 eyelet 1.3x2.5
3-837-814 spring, dial cord
3-837-660 contact plate "C", battery negative
3-837-626 push button, power switch
7-685-104-24 tapping screw ⊕P 2x6
7-621-259-45 screw ⊕P 2.6x6
7-623-407-01 lock washer, external teeth 2.6φ
3-837-664 mounting metal, band selector
7-621-259-45 screw ⊕P 2.6x6
7-623-407-01 lock washer, external teeth 2.6φ
3-830-343-02 lever C, band selector
1-222-231-11 VOLUME control, 5kΩ
3-830-362 retainer, lever
3-837-663 connecting metal, band selector
1-514-546-13 switch, antenna select.
7-685-150-21 tapping screw ⊕P 3x16
3-837-801 lever B, band selector
7-621-259-45 screw ⊕P 2.6x6
3-837-808 shield plate, output transformer
3-830-332 holder, ferrite bar antenna
1-401-429 coil, ferrite bar
3-827-060 cushion, bar antenna
Y-38378-51-2 tuner ass'y, vhf wb (FMC-16S1)
3-837-812 cushion, rubber
3-824-751 heat sink
1-507-276-12 jack, 6 gang
7-685-133-21 tapping screw ⊕P 2.6x6
1-539-652-12 printed circuit board, main
7-682-147-01 screw ⊕P 3x6
3-837-617 main chassis
3-825-643 contact plate, battery positive
1-222-284-11 TONE control, 5kΩ
3-837-616 holder, TONE control
3-811-133-00 spring, volume knob
3-830-339-02 drum, volume indicator
3-837-805 case A, tuning indicating circuit board
1-539-653-12 printed circuit board, resonance indicator
3-837-806 case B, resonance indicator circuit board
3-837-658 contact plate "A", lamp switch.
3-837-659 contact plate "B", lamp switch
3-837-692- cushion, speaker
3-837-639 insulator, lamp switch
3-837-815- shield plate
1-502-267 speaker
□ 3-837-615 sub-chassis
1-518-051-12 pilot lamp
7-624-118-01 retaining washer, E 2.5
3-825-636 pulley, p 6
□ 7-625-705-70 rivet, 1.4φx6
3-837-668 pointer
□ 7-625-705-71 rivet, 1.4φx10
1-151-177-11 tuning capacitor, fm/a-m 4 gang
3-852-505 cushion, tuning capacitor
1-513-284 switch, AFC
3-836-567 grounding piece
3-837-802 cushion, printed circuit board
3-837-619 drum, dial
7-621-259-45 screw ⊕P 2.6x6
1-514-561 switch, power
3-830-360 spring, slide switch

Parts marked □ are included in sub chassis ass'y, X-38376-85.

## 5-3. PACKING


X-44900-02-1
polishing cloth in
polyethylene bag
3-837-685
battery box
X-38376-01-2
belt ass'y
X-38376-03
bracket ass'y, shoulder
belt
3-995-551-11
instruction manual
3-837-811
packing manual
3-837-686
accessory box
3-837-687
cushion
2-049-002
polyethylene bag
3-837-683-11
packing carton

# SECTION 6
# ELECTRICAL PARTS LIST

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| | | **SEMICONDUCTORS** | |
| Q01 | 1-801-003 | transistor | 2SC710 |
| Q02 | | transistor | 2SK23 |
| Q03 | 1-801-003 | transistor | 2SC710 |
| Q04 | 1-801-003 | transistor | 2SC710 |
| Q05 | 1-801-003 | transistor | 2SC710 |
| Q06 | 1-801-003 | transistor | 2SC710 |
| Q07 | 1-801-003 | transistor | 2SC710 |
| Q08 | 1-801-003 | transistor | 2SC710 |
| Q09 | 1-801-004 | transistor | 2SC870 |
| Q10 | 1-801-004 | transistor | 2SC870 |
| Q11 | 1-801-005 | transistor | 2SB495 |
| Q12 | 1-801-005 | transistor | 2SB495 |
| Q101 | 1-801-305 | transistor | 2SC668 |
| Q102 | 1-801-003 | transistor | 2SC710 |
| Q103 | 1-801-003 | transistor | 2SC710 |
| Q201 | | transistor | 2SC633 |
| D01 | | diode | 1S351M |
| D02 | | diode | 1S1555 |
| D03 | | diode | 1S1555 |
| D04 | | diode | 1S426 |
| D05 | | diode | 1T26 |
| D06 | | diode | 1T26 |
| D201 | | diode | 1S1555 |
| D202 | 1-801-951 | diode (LED) | GPR-1 |
| Th01 | 8-691-002-11 | thermistor | CS-47 |
| | | **COILS AND TRANSFORMERS** | |
| L01 | 1-425-449 | coil, fm antenna | |
| L02 | 1-407-180 | 1.5 μH, micro inductor | |
| L03 | 1-425-638 | coil, fm rf | |
| L04 | 1-405-452 | coil, fm osc | |
| L05 | 1-407-175 | 330 μH, micro inductor | |
| L06 | 1-401-429 | coil, ferrite bar antenna | |
| L07 | 1-405-306-12 | coil, mw osc | |
| L08 | 1-407-169 | 100 μH, micro | |
| L09 | | – discarded – | |
| L10 | 1-407-175 | 330 μH, micro inductor | |
| L11 | | – discarded – | |
| L12 | 1-401-201-12 | coil, antenna loading | |
| L101 | 1-425-631 | coil, vhf wb antenna | |
| L102 | 1-425-631 | coil, vhf wb rf | |
| L103 | 1-425-631 | tripler coil 1 | |
| L104 | 1-425-631 | tripler coil 2 | |
| L105 | 1-407-455 | 2.2 μH, micro inductor | |
| L106 | 1-407-463 | 10 μH, micro inductor | |
| L107 | 1-405-447 | coil, vhf wb osc | |
| L201 | 1-407-175 | 330 μH, micro inductor | |
| IFT A1 | 1-403-137 | transformer, a-m i-f | |
| IFT F1 | 1-403-296 | transformer, fm i-f | |
| IFT F2 | 1-403-294 | transformer, fm i-f | |
| IFT F3 | 1-403-244-15 | transformer, fm i-f | |
| IFT F4 | 1-403-244-15 | transformer, fm i-f | |
| IFT F5 | 1-403-300 | transformer, fm i-f | |
| IFT F6 | 1-403-273-15 | transformer, fm i-f | |
| IFT F7 | 1-403-557 | transformer, fm i-f | |
| IFT101 | 1-403-242-31 | transformer, vhf wb i-f | |
| CFT A1 | 1-403-164-12 | transformer, a-m i-f | |
| CF F1 | 1-527-501-11 | 10.7 MHz, ceramic filter | |
| T01 | 1-423-064 | transformer, driver | |
| T02 | 1-427-251 | transformer, output | |
| | | **CAPACITORS** | |
| CV1~4 | 1-151-177-11 | tuning capacitor, fm/a-m 4 gang | |
| CT1 | 1-141-087-12 | capacitor, trimmer | |
| CT2 | 1-141-087-12 | capacitor, trimmer | |
| CT3 | 1-141-090-11 | capacitor, trimmer | |
| CT4 | 1-141-090-11 | capacitor, trimmer | |
| C01 | 1-101-874 | 36 pF | ceramic |
| C02 | 1-101-882 | 51 pF | ceramic |
| C03 | 1-101-888 | 68 pF | ceramic |
| C04 | 1-101-882 | 51 pF | ceramic |
| C05 | 1-101-002 | 0.02 μF | ceramic |
| C06 | 1-101-004 | 0.01 μF | ceramic |
| C07 | 1-101-864 | 20 pF | ceramic |
| C08 | 1-105-821-12 | 0.001 μF | mylar |
| C09 | 1-101-869 | 27 pF | ceramic |
| C10 | 1-101-955 | 5 pF | ceramic |
| C11 | 1-101-961 | 12 pF | ceramic |
| C12 | 1-101-865 | 22 pF | ceramic |
| C13 | 1-101-861 | 15 pF | ceramic |
| C14 | 1-101-952 | 2 pF | ceramic |
| C15 | 1-103-608 | 200 pF | polystyrene |
| C16 | 1-101-004 | 0.01 μF | ceramic |
| C17 | 1-101-004 | 0.01 μF | ceramic |
| C18 | | – discarded – | |
| C19 | 1-101-918 | 0.001 μF | ceramic |
| C20 | 1-101-003 | 0.005 μF | ceramic |
| C21 | 1-101-918 | 0.001 μF | ceramic |
| C22 | | – discarded – | |
| C23 | 1-101-003 | 0.005 μF | ceramic |
| C24 | | – discarded – | |
| C25 | 1-101-004 | 0.01 μF | ceramic |
| C26 | 1-101-003 | 0.005 μF | ceramic |
| C27 | 1-121-424 | 470 μF 6.3V | electrolytic |
| C28 | 1-105-831-12 | 0.0068 μF | mylar |
| C29 | 1-103-605 | 150 pF | polystyrene |
| C30 | 1-105-833-12 | 0.01 μF | mylar |
| C31 | 1-121-391 | 1 μF 50V | electrolytic |
| C32 | 1-101-004 | 0.01 μF | ceramic |
| C33 | 1-101-004 | 0.01 μF | ceramic |
| C34 | | – discarded – | |
| C35 | | – discarded – | |
| C36 | | – discarded – | |

| Ref. No. | Part No. | Description |
|---|---|---|
| C37 | 1-121-391 | 1 μF 50V electrolytic |
| C38 | 1-101-952 | 2 pF ceramic |
| C39 | 1-101-005 | 0.02 μF ceramic |
| C40 | 1-121-419 | 220 μF 6.3V electrolytic |
| C41 | | – discarded – |
| C42 | 1-101-005 | 0.02 μF ceramic |
| C43 | 1-101-004 | 0.01 μF ceramic |
| C44 | 1-101-017 | 200 pF ceramic |
| C45 | 1-101-005 | 0.02 μF ceramic |
| C46 | 1-101-951 | 1 pF ceramic |
| C47 | | – discarded – |
| C48 | | – discarded – |
| C49 | 1-101-004 | 0.01 μF ceramic |
| C50 | 1-101-004 | 0.01 μF ceramic |
| C51 | 1-101-004 | 0.01 μF ceramic |
| C52 | 1-101-952 | 2 pF ceramic |
| C53 | 1-101-004 | 0.01 μF ceramic |
| C54 | | – discarded – |
| C55 | | – discarded – |
| C56 | 1-101-004 | 0.01 μF ceramic |
| C57 | | – discarded – |
| C58 | 1-101-017 | 200 pF ceramic |
| C59 | 1-101-017 | 200 pF ceramic |
| C60 | 1-121-469 | 10 μF 16V electrolytic |
| C61 | 1-101-005 | 0.02 μF ceramic |
| C62 | 1-121-419 | 220 μF 6.3V electrolytic |
| C63 | 1-121-434 | 0.47 μF 50V electrolytic |
| C64 | 1-121-469 | 10 μF 16V electrolytic |
| C65 | 1-105-837-12 | 0.022 μF mylar |
| C66 | 1-121-344 | 3.3 μF 25V electrolytic |
| C67 | 1-101-918 | 0.001 μF ceramic |
| C68 | 1-121-344 | 3.3 μF 25V electrolytic |
| C69 | 1-121-419 | 220 μF 6.3V electrolytic |
| C70 | 1-127-022 | 0.47 μF 10V electrolytic (alox) |
| C71 | | – discarded – |
| C72 | 1-121-419 | 220 μF 6.3V electrolytic |
| C73 | 1-121-424 | 470 μF 6.3V electrolytic |
| C74 | 1-105-829-12 | 0.0047 μF mylar |
| C75 | 1-105-829-12 | 0.0047 μF mylar |
| C76 | 1-101-798 | 0.2 μF ceramic |
| C77 | 1-121-424 | 470 μF 6.3V electrolytic |
| C78 | | – discarded – |
| C79 | 1-105-825-12 | 0.0022 μF mylar |
| C80 | 1-121-736 | 1,000 μF 10V electrolytic |
| C81 | | – discarded – |
| C82 | 1-101-004 | 0.01 μF ceramic |
| C83 | 1-101-004 | 0.01 μF ceramic |
| C84 | 1-101-963 | 100 pF ceramic |
| C85 | 1-121-413 | 100 μF 6.3V electrolytic |
| C86 | 1-101-963 | 100 pF ceramic |
| C87 | 1-101-963 | 100 pF ceramic |
| C88 | 1-101-963 | 100 pF ceramic |
| C89 | 1-101-918 | 0.001 μF ceramic |
| C90 | 1-121-424 | 470 μF 6.3V electrolytic |
| C91 | 1-101-882 | 51 pF ceramic |
| C92 | 1-101-004 | 0.01 μF ceramic |
| C93 | 1-101-004 | 0.01 μF ceramic |
| C101 | 1-101-957 | 7 pF ceramic |
| C102 | 1-101-878 | 43 pF ceramic |
| C103 | 1-101-954 | 4 pF ceramic |
| C104 | 1-101-952 | 2 pF ceramic |
| C105 | 1-101-460 | 0.002 μF ceramic |
| C106 | 1-101-460 | 0.002 μF ceramic |
| C107 | 1-101-957 | 7 pF ceramic |
| C108 | 1-101-953 | 3 pF ceramic |
| C109 | 1-107-085 | 100 pF silvered mica |
| C110 | 1-101-919 | 0.002 μF ceramic |
| C111 | 1-107-099 | 2 pF silvered mica |
| C112 | 1-101-919 | 0.002 μF ceramic |
| C113 | 1-107-098 | 1 pF silvered mica |
| C114 | 1-107-105 | 8 pF silvered mica |
| C115 | 1-107-106 | 9 pF silvered mica |
| C116 | 1-101-923 | 0.01 μF ceramic |
| C117 | 1-101-919 | 0.002 μF ceramic |
| C118 | 1-101-860 | 9 pF ceramic |
| C119 | 1-101-959 | 10 pF ceramic |
| C201 | 1-101-874 | 36 pF ceramic |
| C202 | 1-121-467 | 10 μF 25V electrolytic |
| C203 | 1-105-839-12 | 0.033 μF mylar |
| C204 | 1-121-413 | 100 μF 6.3V electrolytic |

## RESISTORS

All resistors are 1/8W 5% carbon resistors, unless otherwise specified. The symbol ※ indicates a component whose value is to be selected to yield normal operating condition.

| | | |
|---|---|---|
| VR01 | 1-222-231-11 | 5 kΩ volume control |
| VR02 | 1-222-284-11 | 5 kΩ tone control |
| R01 | 1-240-527 | 180 kΩ |
| R02 | 1-240-425 | 10 Ω |
| R03 | 1-240-537 | 470 kΩ |
| R04 | 1-240-497 | 10 kΩ |
| R05 | | – discarded – |
| R06 | 1-240-508 | 30 kΩ |
| R07 | 1-240-521 | 100 kΩ |
| R08 | 1-240-461 | 330 Ω |
| R09 | 1-240-453 | 150 Ω |
| R10 | 1-240-531 | 270 kΩ |
| R11 | 1-240-473 | 1 kΩ |
| R12 | 1-240-456 | 200 Ω |
| R13 | 1-240-461 | 330 Ω |
| R14 | 1-240-473 | 1 kΩ |
| R15 | 1-240-534 | 360 kΩ |
| R16 | 1-240-467 | 560 Ω |
| R17 | 1-240-490 | 5,100 Ω |

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| R18 | 1-244-712 | 43 kΩ | ¼W |
| R19 | 1-240-449 | 100 Ω | |
| ※R20 | 1-240-509 | 33 kΩ | |
| | 1-240-510 | 36 kΩ | |
| | 1-240-511 | 39 kΩ | |
| | 1-240-512 | 43 kΩ | |
| | 1-240-513 | 47 kΩ | |
| | 1-240-514 | 51 kΩ | |
| R21 | 1-240-521 | 100 kΩ | |
| R22 | 1-244-680 | 2 kΩ | ¼W |
| R23 | 1-240-449 | 100 Ω | |
| R24 | 1-244-660 | 300 Ω | ¼W |
| R25 | 1-244-675 | 1,200 Ω | ¼W |
| R26 | 1-240-470 | 750 Ω | |
| R27 | 1-240-501 | 15 kΩ | |
| R28 | 1-240-509 | 33 kΩ | |
| ※R29 | 1-240-494 | 7,500 Ω | |
| | 1-240-497 | 10 kΩ | |
| | 1-240-501 | 15 kΩ | |
| | 1-240-504 | 20 kΩ | |
| | 1-240-506 | 24 kΩ | |
| | 1-240-508 | 30 kΩ | |
| R30 | 1-240-509 | 33 kΩ | |
| R31 | 1-240-497 | 10 kΩ | |
| R32 | 1-240-465 | 470 Ω | |
| R33 | 1-240-443 | 56 Ω | |
| R34 | 1-240-481 | 2,200 Ω | |
| R35 | 1-240-504 | 20 kΩ | |
| R36 | 1-240-497 | 10 kΩ | |
| R37 | 1-240-465 | 470 Ω | |
| R38 | 1-240-449 | 100 Ω | |
| R39 | 1-240-465 | 470 Ω | |
| R40 | 1-240-531 | 270 kΩ | |
| R41 | 1-240-465 | 470 Ω | |
| R42 | 1-240-449 | 100 Ω | |
| R43 | 1-240-473 | 1 kΩ | |
| R44 | 1-240-490 | 5,100 Ω | |
| R45 | 1-240-473 | 1 kΩ | |
| R46 | 1-240-473 | 1 kΩ | |
| R47 | 1-240-494 | 7,500 Ω | |
| R48 | 1-240-494 | 7,500 Ω | |
| R49 | 1-240-455 | 180 Ω | |
| R50 | 1-240-521 | 100 kΩ | |
| R51 | 1-240-475 | 1,200 Ω | |
| R52 | 1-244-715 | 56 kΩ | ¼W |
| R53 | 1-244-673 | 1 kΩ | ¼W |
| R54 | 1-244-681 | 2,200 Ω | ¼W |
| R55 | 1-240-540 | 620 kΩ | |
| R56 | 1-240-475 | 1,200 Ω | |
| R57 | 1-240-440 | 43 Ω | |

| Ref. No. | Part No. | Description | | |
|---|---|---|---|---|
| R58 | 1-240-458 | 240 Ω | | |
| R59 | 1-240-501 | 15 kΩ | | |
| R60 | 1-240-494 | 7,500 Ω | | |
| R61 | 1-240-449 | 100 Ω | | |
| R62 | 1-244-613 | 3.3 Ω | ¼W | |
| R63 | 1-240-442 | 51 Ω | | |
| R64 | 1-240-477 | 1,500 Ω | | |
| R65 | 1-244-605 | 1.5 Ω | ¼W | |
| R66 | 1-240-448 | 91 Ω | | |
| R67 | | – discarded – | | |
| R68 | 1-244-625 | 10 Ω | ¼W | |
| R69 | 1-240-481 | 2,200 Ω | | |
| R70 | 1-244-752 | 2 MΩ | ¼W | |
| R71 | 1-244-714 | 51 kΩ | ¼W | |
| R72 | 1-240-515 | 56 kΩ | | |
| R73 | 1-240-451 | 120 Ω | | |
| R74 | 1-244-651 | 120 Ω | ¼W | |
| R101 | 1-244-661 | 330 Ω | ¼W | |
| R102 | 1-244-722 | 68 kΩ | ¼W | |
| R103 | 1-244-656 | 200 Ω | ¼W | |
| R104 | 1-244-726 | 160 kΩ | ¼W | |
| R105 | 1-244-646 | 75 Ω | ¼W | |
| R106 | 1-244-656 | 200 Ω | ¼W | |
| R107 | 1-244-649 | 100 Ω | ¼W | |
| R108 | 1-244-707 | 27 kΩ | ¼W | |
| R109 | 1-244-705 | 22 kΩ | ¼W | |
| R110 | 1-244-690 | 5,100 Ω | ¼W | |
| R201 | 1-210-376 | 16 kΩ | 1/16W | micro |
| R202 | 1-209-774 | 5,100 Ω | 1/16W | micro |
| R203 | 1-210-355 | 100 Ω | 1/16W | micro |
| R204 | 1-210-385 | 51 kΩ | 1/16W | micro |
| R205 | 1-210-355 | 100 Ω | 1/16W | micro |

**MISCELLANEOUS**

| | | |
|---|---|---|
| TEL ANT | 1-501-124-12 | telescopic antenna |
| SP | 1-502-267 | speaker, 8 Ω |
| J01~06 | 1-507-276-12 | jack, 6 gang |
| S01 | 1-514-546-13 | switch, antenna select |
| S02 | 1-513-284 | switch, AFC |
| S03 | 1-513-278 | slide switch, band select |
| S04 | | lamp switch |
| S05 | 1-514-561 | switch, power |
| PL01 | 1-518-051-12 | pilot lamp |
| XTAL | 1-527-174 | resonator, crystal |
| | Y-38378-51-2 | tuner ass'y, vhf wb (FMC-16 S1) |
| | 1-539-517-11 | printed circuit board, vhf wb tuner |
| | 1-539-652-12 | printed circuit board, main |
| | 1-539-653-12 | printed circuit board, resonance indicator |

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